FLEXLAB™: THE WORLD'S MOST ADVANCED BUILDING EFFICIENCY TEST BED

FLEXLAB CLOSES THE ENERGY-EFFICIENCY ACHIEVEMENT GAP FOR BUILDINGS

> *This facility could be the most important building in the country.*
>
> **JES PEDERSEN**
> CEO, WEBCOR BUILDERS

THE PROBLEM

Many buildings are designed to be energy efficient, but once they're up and running, use a lot more energy than planned. In fact, a recent study[1] found buildings designed to be energy efficient sometimes end up using twice the energy expected, posing a huge obstacle to reaching ambitious CA and US clean energy goals.

OUR SOLUTION

By measuring a building's energy use under real-world conditions and on a significant scale, FLEXLAB provides real time assessment of building energy use. FLEXLAB offers a way to test-drive energy efficiency systems, identify problems, and make changes before breaking ground. FLEXLAB unleashes the real potential of energy efficiency in buildings.

FLEXLAB LEADING THE WAY

FLEXLAB is the brainchild of our nation's leading energy efficiency experts at the U.S. Department of Energy's Lawrence Berkeley National Laboratory—the home of energy efficiency innovation for decades.

Berkeley Lab's scientists are developing game-changing innovations, including: window coatings, simulation software, electronic ballasts, and appliance standards that have saved consumers a combined $484 billion.[2,3]

> *FLEXLAB is an exciting contribution that will help industry.*
>
> **DAVID DANIELSON**
> ASSISTANT SECRETARY,
> U.S. DEPT. OF ENERGY

FLEXLAB launches the next chapter of Berkeley Lab's leadership by unlocking the mysteries of integrated design, and developing new technologies creating transparency throughout the design build process which will eventually transform the way buildings perform.

WHAT FLEXLAB CAN DO FOR YOU

FLEXLAB is the first testbed in the world that can evaluate the energy efficiency of major building systems, as an integrated system, under real-world conditions. Stakeholders can evaluate energy-efficient building technologies individually or as integrated systems in advance of building projects or retrofits, in order to:

- **Optimize integrated systems to maximize energy savings**
- **Ensure occupant comfort and user-friendliness**
- **Verify cost-benefit numbers**
- **Train building operators**
- **Build confidence in new technologies**

> ***FLEXLAB can help solve the integrated design problem.***
>
> **KEVIN HYDES**
> CEO, INTEGRAL GROUP

Four large test beds:
Including one that rotates, allow a variety of testing scenarios.

Comparison testing:
Two cell testbeds allow side-by-side tests for comparisons of energy efficiency technologies.

Interchangible elements:
Allow testers to swap out windows, walls, skylights, floors, lighting, HVAC systems, and other architectural elements.

Test-drive technologies:
Users can test-drive different technologies for HVAC systems, lighting, windows, building envelope, control systems, and plug loads in different locations globally.

Individual circuits and meters:
Every outlet has its own circuit and power metering.

High accuracy sensors and instrumentation:
Includes embedded sensors throughout the facility.

Lighting and plug-load test bed:
Measures energy power, technology performance, and evaluates more subjective factors, such as visual comfort and user-friendliness.

On-site training:
Saves FLEXLAB users time on ramping-up efficiency operations.

VISIT flexlab.lbl.gov FOR MORE INFORMATION.

BERKELEY LAB

U.S. DEPARTMENT OF ENERGY

1 New Buildings Institute Study, 2008: How Accurate is Energy Modeling in the Market? Mark Frankel and Cathy Turner, White Salmon, WA: NBI, 2008. (http://newbuildings.org/sites/default/files/ModelingAccuracy_FrankelACEEE2008_0.pdf)

2 National Research Council. Energy Research at DOE: Was It Worth It? Energy Efficiency and Fossil Energy Research 1978 to 2000. Washington, DC: The National Academies Press, 2001. ISBN: 0-309-07448-7 (http://www.nap.edu/catalog/10165.html)

3 Stephen Meyers, Alison Williams, and Peter Chan, 2013. Energy and Economic Impacts of U.S. Federal Energy and Water Conservation Standards Adopted from 1987 through 2012. LBNL-6217E (http://escholarship.org/uc/item/54b4782q)